ABSTRACT

Methods and systems are provided for increasing the efficiency of the ion beam during scanning workpieces in ion implanting such that multiple wafers are arranged on a platen or support so that a greater portion of the beam scans the workpiece surface. Specifically, an apparatus is provided for ion implanting a plurality of workpieces. The apparatus includes an ion source for generating an ion beam having a scan width and a scan distance which defines a predetermined scan area, a holder for receiving the workpieces that are arranged so as to maximize the surface area of the workpieces present within the predetermined scan area. Thereby, a scanner may scan the ion beam over the predetermined scan area so that the utilization efficiency of said ion beam on the workpieces is increased. More particularly, the workpieces may be semiconductor wafers that are arranged over the holder or a platen according to the formula:

$$d_S = \sqrt{D_w^2 - \left(w_s - D_w\right)^2} * \left(Q_w - 1\right) + D_w + OS$$

As a result of arranging the workpieces on the holder in this manner, the utilization of ion beam is maximized.